muon detector systems status

CMU

- status
    - no cathode voltage on 17w
        - 70% efficiency
            - reduced pulse amplitude and width
            - reconstruction changes could improve this
                - » (imho)
                - » need to characterize effects $(v_d, Q(t))$, may have enough information
        - arch pull would restore $\geq 2/3$
    - some unknown problem in 7e
        - 85% efficiency
        - more important perhaps than 17w as source unknown
    - "power supply" problems on various wedges
        - voltage sag
            - imperceptible change in pulse shape
        - +occasional ripple
            - adds noise sending trigger rates through the roof
        - investigated during shutdown without learning much
        - investigation continues (slowly) by UI+FNAL ee types
    - charge division calibration needs tweek
    - online calibration lacking
- ongoing work
    - software changes for 17w
    - online calibration
    - static load for 1 wedge

CMP

- status
    - all preamp problems addressed during shut down; no particular problems now
    - single and multi (HV) channel failure rate perhaps higher than other chambers
- ongoing work
    - build an accessible HV fan out box for bottom chambers

CMX

- status
    - se miniskirt (25°) fixed or added in shutdown
    - single channels fixed added 0.25% to efficiency so call it practice for fixing the two large holes (1%)
- ongoing work
    - miniskirt
        - in principle could have been finished west by now; need bodies, wouldn't take long if we had them
        - check trigger and reconstruction with se
        - need to add trigger for se
            - primitives for cmx ok, need work on csx; track extrapolation
    - calibration and alignment
        - have numbers for v_d; need to disentangle wedge z alignment (too much data clearly)

muon detector systems status

BMU

- status
  - few channels fixed during Jan access; mainly pre-amps replaced
  - cable left unplugged during access Mar 12 replaced during controlled access Mar 13
  - after power outage last week, one 15 °HV section was tripping. Fixed itself after a couple of days (hall conditions?)

TSU

- status
  - guess: un-cabling and re-cabling of TSU CCU's during shutdown zapped ~20 TSU PAD's with built up static electricity
    - Now have grounding braid connecting all TSU PAD's to toroid steel
    - Took some time to recover due to ~20% infant mortality of PAD's (and difficulty in accessing TSU)
    - Steps taken to avoid the infant mortality
      - longer PAD testing before insertion
      - stage repairs in trigger region from working PAD's in non-trigger region install new pads in non-trigger region

CCUs

- status
  - shutdown work
    - all 20 CCU's in system removed, modified, replaced
    - add two more LV power supplies to PSM monitoring
      - required HW modifications to CCU's
      - additional PSM black boxes
    - PSM SW mods
      - new software checks old/new HV settings, to avoid false resets due to glitches
  - cost of replacing memory with rad hard $4k/CCU, abandoned
  - west shielding and (hardware?) software upgrades have no apparent effect on tripping frequency (bummer)
- ongoing work
  - still trying to understand failures

CSX/CSP/BSU

- status
  - few dead channels fixed here and there during shutdown

muon systems infrastructure status

HVMON++/muon3pc

- fallout from ifix upgrade still not completely gone
  - monitoring slower
    - regular heartbeat alarms from scintillator computer
    - other?
  - sucked up lots of our resources
- trigger inhibit failures
  - known failure mode in the phasing of hardware and software inhibits
    - fix agreed on, not implemented
  - software inhibit setting failures due to network failures
- CES/CCR/CPR channel to bar map sorted out yet?
- Other mysteries impossible to track down
  - random ramp down

TDCs

- more spares than we've had in a long time
  - 2 hot spares + 3 ready to be hot spares
  - question is whether to try fixing single channel failures or leave them as hot spares
  - 5 spares is 5% of total (3 needed for miniskirt completion)

monitoring

- online calibration
  - calibration+consumer (almost) done (lannon)
  - needs consumer interface (vickey)
- consumer monitoring
  - YMon: keep working on smarter code and better documentation
    - reference plot chi-sq doesn't work for somethings
    - reference plots sometimes don't change as fast as the actual situation does…
  - TrigMon (below)
  - ObjectMon: not taking full advantage of the possibilities

trigger

- most of the trigger is finished
  - miniskirt
  - in IMU we are still toying with the idea of shortening the scintillator pulse length so we can tighten the gate and reduce the rate; shielding helped west side
- need better tools
  - monitoring not so great
  - masking
  - not particularly <u>our</u> problem, but a problem

other

- ASD test stand could benefit from a few small upgrades